Nursery Production

Nursery production includes standards that challenge students to plan for needs in the production of ornamental products. As the urban society continues to expand to other regions, nursery production is important to provide aesthetic landscaping for various cultures and desires.

Pre-requisites: **None**

Recommended Credit: **½ or 1**

Recommended Grade Levels: **9th, 10th or 11th**

***** **½ denotes learning expectations that must be met when teaching the course for ½ credit.**

****** **All learning expectations must be met when teaching the course for 1 credit.**

Nursery Production

Standard 1.0

The student will assess the history, significance, and impact of the nursery industry upon agriculture in our society.

Standard 2.0

The student will evaluate the importance of plant physiology to plant growth and development.

Standard 3.0

The student will evaluate soil and environmental needs for desired plant growth.

Standard 4.0

The student will propagate plants, controlling weeds and diseases that affect them.

Standard 5.0

The student will assess the nutritional and watering needs for growing container plants and field plants.

Standard 6.0

The student will evaluate sales, marketing and business principles used in retail and wholesale nursery operations.

Standard 7.0

The student will create a landscape design using common nursery plants and turf, proper timing and maintenance.

Standard 8.0

The student will integrate academic competencies in the areas of nursery production and landscape management.

Standard 9.0

The student will develop premier leadership and personal growth needed for careers in nursery production.

Nursery Production

Course Description:
This course is designed for students to evaluate techniques used for the production of various nursery stock plants. Students will determine the nutritional and environmental needs and uses of different nursery stock plants.

Standard 1.0

The student will assess the history, significance, and impact of the nursery industry upon agriculture in our society.

Learning Expectations:
The student will:

1.1 Assess the importance of the nursery production and related horticulture industries in Tennessee and the United States. ½

1.2 Evaluate the historical significance of the nursery business in Tennessee and its impact on Tennessee's economy. ½

1.3 Assess the importance of planning financial decisions and maintaining and managing resources to success in the nursery business. ½

1.4 Critique the importance of management skills, job responsibility and work ethics to the nursery industry.

Evidence Standard is Met:
The student will:

- Determine the impact of nursery related industries on the local or regional economy.
- Explain how the nursery industry has evolved over time.
- Prepare examples of job possibilities that occur because of the nursery production industry.
- Relate management plans, management of personnel and work ethics to business success.
- Determine skills a person needs in various careers to be successful in the nursery business.

Integration/Linkages
Mathematics, Social Studies, Language Arts, American Nurseryman Association Standards, Geography, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks:

- Develop a timeline of the significant developments of the nursery business over the last 100 years.
- Develop a business story of a nursery operation based on interviews with owners and operators.
- Establish a directory of businesses in the area that are involved in producing, selling and marketing nursery products and services.

Standard 2.0

The student will evaluate the importance of plant physiology to plant growth and development.

Learning Expectations:
The student will:

2.1 Evaluate the functions of the parts of plant roots and compare the two types of root systems used in nursery production. ½

2.2 Compare the processes of photosynthesis, respiration, and transpiration. ½

2.3 Describe the function and location of the parts of the plants used in nursery production. ½

2.4 Examine the reproductive parts of the plants used in nursery production. ½

2.5 Analyze the parts of the flower and fruit of plants used in nursery production. ½

Evidence Standard is Met:
The student will:

- Compare the functions of taproot and fibrous root systems for efficiency.
- Determine the importance of various plant processes to plant growth and development.
- Examine the role of the structures used for plant reproduction.
- Recognize the different leaf patterns, leaf arrangements and leaf vein patterns.
- Differentiate between the parts of the flower.
- Differentiate between the basic parts of the plant.

Integration/Linkages
Biology, Botany, Language Arts, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks:
- Label the basic parts of the plant and give the function of each part within the plant.
- Diagram specific leaf margin shapes and arrangements from pressed or live specimens.
- Dissect a flower and discuss the function of each part of the flower.
- Develop a model showing the different plant processes.

Standard 3.0
The student will evaluate soil and environmental needs for desired plant growth.

Learning Expectations:
The student will:
3.1 Evaluate the effect of environmental stresses on plants.
3.2 Compare the macronutrients and micronutrients needed by plants.
3.3 Relate soil pH to plant health.
3.4 Evaluate the effects of nitrogen, phosphorus, potassium and iron deficiencies to plants.
3.5 Evaluate the importance of organic matter and fertilizers to plants.

Evidence Standard is Met:
The student will:
- Demonstrate the use of environmental conditions to affect plant performance.
- Evaluate samples of plants affected by environmental stresses.
- Analyze fertilizer components for macronutients and micronutrients.
- Analyze soil pH.
- Examine plants affected by nutritional deficiencies.

Integration/Linkages
Mathematics, Chemistry, Language Arts, Nursery Industry Standards, Biology, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks:
- Perform a soil test and analyze the results for a specific nursery crop for fertilizer requirements and pH adjustments.
- Develop methods of dealing with nutritional deficiencies in plants.
- Design a fertilization recommendation for a specific crop from planting to harvest.

Standard 4.0
The student will propagate plants, controlling weeds and diseases that affect them.

Learning Expectations:
The student will:
4.1 Identify the nursery industry's most common nursery plants and methods of propagating plants. ½
4.2 Evaluate common weeds and disorders affecting nursery production. ½
4.3 Evaluate plant production problems found in local nurseries. ½
4.4 Develop safety standards for chemical use and the importance of chemical certification.
4.5 Evaluate the use of integrated pest management systems for controlling pests.

Evidence Standard is Met:
The student will:
- Identify nursery plant specimen and the common method of propagation for each plant.
- Evaluate specimen of weeds and diseases that affect nursery production.
- Use reference materials to determine the cause of plant production problems.
- Use label instructions to determine chemical use in a nursery production program.
- Discuss how to establish an IPM program in a nursery production program.

Integration/Linkages

Biology, Chemistry, Mathematics, Language Arts, Nursery Association Standards, OSHA Standards, TOSHA Standards, EPA Regulations, National FFA Guidelines for Nursery and Landscape CDE, career development event, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks:

- Propagate ten nursery plants and describe the purposes for different methods of propagation.
- Develop a portfolio of plant disorders and weeds and methods for controlling them.
- Develop an Integrated Pest Management, IPM, program for a specific nursery stock.
- Demonstrate how to properly use a chemical based on the label.

Standard 5.0

The student will assess the nutritional and watering needs for growing container plants and field plants.

Learning Expectations:

The student will:

5.1	Evaluate the advantages and disadvantages of growing plants in containers.	½
5.2	Prescribe materials needed for container plant production.	½
5.3	Evaluate how environmental fluctuations affect nursery crop production.	½
5.4	Evaluate the importance of water alkalinity and salt content.	½
5.5	Evaluate the importance of irrigation and fertilization to nursery crop production.	½
5.6	Evaluate the importance of field production of nursery crops.	½

Evidence Standard is Met:

The student will:

- Recommend sizes of containers, soil mixes and the appropriate plants for a container nursery.
- Select five crops and plan the growing of that crop from planting to finish, planning for variations and problems.
- Determine the proper pH for particular crops and recognize the importance of pH on irrigation water.
- Design an irrigation and fertilization plan for a nursery.
- Plan a field nursery, including suggested plants and requirements for cultural controls.

Integration/Linkages

Mathematics, Biology, Language Arts, Nurserymen's Associations Standards, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Create a plan for a container nursery and a field-grown nursery, listing all the components needed to establish these types of nurseries.
- Grow a quick container crop or an easy container ground cover from start to finish.
- Test water quality, pH, and fertility in container grown plants.
- Compare the market demand for container and field grown plants in the nursery business.

Standard 6.0

The student will evaluate sales, marketing and business principles used in retail and wholesale nursery operations.

Learning Expectations:

The student will:

6.1 Examine the principles of marketing, selling and maintaining nursery plants in retail or wholesale outlet.

6.2 Evaluate the role of leadership in the business management aspect of a nursery business.

6.3 Develop a profile of what a successful sales associate and customer service employee should display in front of the customer.

6.4 Assess new trends in nursery products and methods of presenting the product.

Evidence Standard is Met:

The student will:

- Design a business plan for a nursery that includes marketing and customer service suggestions.
- Profile a leader of a company and his/her use of leadership to make a company successful.
- Demonstrate appropriate customer service skills.

- Assess future trends in the nursery industry from industry publications and information.
- Design displays that prepare for seasonal décor changes.

Integration/Linkages
Mathematics, Science, Social Studies, Language Arts, Nursery Industry Standards, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks:
- Plan a mock business and create marketing strategies and other tools to make the business succeed.
- Interview a company president and determine the leadership role assumed to make the business a success.
- Develop interpersonal relationship skills by role-playing as customer and customer assistant and learn the basic communication skills and requirements to be a successful salesperson.
- Build a window display and seasonal display to market nursery products to the customer.

Standard 7.0

The student will create a landscape design using common nursery plants and turf, proper timing and maintenance.

Learning Expectations:
The student will:
7.1 Evaluate the components of an appropriate landscape design using nursery plants.
7.2 Prepare schedules for pruning, fertilizing and planting nursery stock.
7.3 Compare mulches, staking methods and installation methods for landscapes.
7.4 Evaluate the concept of computer design and landscape using new technology and computer illustrations.

Evidence Standard is Met:
The student will:
- Produce a scale model of a landscape using knowledge of plant material and pricing to design a home landscape.
- Create a detailed plan and instruction sheet schedule for pruning, fertilization and planting.
- Create a list of materials for the landscape listing quantity, price, and method of installation and plant description of all plant materials.
- Produce a computer-generated landscape plan and display one or more programs that are currently on the market for landscape design.

Integration/Linkages
Mathematics, Biology, Ecology, Social Studies, Language Arts, National Nursery Standards, National FFA Guidelines for Nursery and Landscape CDE, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks
- Design a landscape model complete with plant materials and accessories.
- Create a detailed materials list for the plan including a maintenance plan.
- Produce a landscape plan that will be presented to a customer for possible installation, using a computer design and a hand-drawn design.

Standard 8.0

The student will integrate academic competencies in the areas of nursery production and landscape management.

Language Arts
The student will:
8.1 Accumulate data and present information in a research paper on how to grow a specific nursery plant crop. ½
8.2 Produce a profile of a person who is a successful business owner in nursery related business. ½
8.3 Prepare a job description for a nursery landscape customer service representative; relating personality traits, leadership skills, and job performance standards.
8.4 Prepare demonstrations on propagation of nursery stock and displays of nursery material.

Mathematics
The student will:
8.5 Calculate the amount of soil needed for an area that will be filled with containers. ½

8.6 Calculate area, volume for specific uses of water, mulches, and soil in the landscape. ½
8.7 Use engineer and architect scales to draw and construct models of landscapes.
8.8 Calculate the percentage of Nitrogen, Phosphorus, and Potassium in fertilizers. ½
8.9 Price out and calculate a landscape plan including all materials.
8.10 Calculate seed straw and sod needed for a turf site.

Science

The student will:

8.11 Diagram and identify parts of plants and give their functions. ½
8.12 Explain the different textures and classifications of soil. ½
8.13 Analyze a pH reading and be able to interpret a soil sample report.
8.14 Identify disorders, insects, and disease problems common to nursery plants.

Evidence Standard is Met:

The students will:

- Prepare oral and written reports from researched material.
- Prepare a business plan for a new nursery production business.
- Present a demonstration on growing a plant from start to finish.
- Prepare a landscape plan from start to finish.

Integration/Linkages

Social Studies, Mathematics, Nursery Industry Standards, Language Arts, Biology, Ecology, Chemistry, National FFA Guidelines for Nursery and Landscape CDE, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Determine what plants are most desirable for a landscape plan and coordinate them into a drawing.
- Research the impact of the nursery industry on the economy.
- Prepare plants for propagation.
- Read and interpret soil and pH tests.
- Create a portfolio of fifty common landscape plants from pressed specimen, pictures or live specimen.

Standard 9.0

The student will develop premier leadership and personal growth needed for careers in nursery production.

Learning Expectations

The student will:

9.1 Develop public speaking abilities through oral presentations and participating in career development events (CDE).
9.2 Evaluate different supervised agriculture experience programs (SAEP) projects that relate to nursery production. ½
9.3 Develop public relations and citizenship skills necessary to be successful in nursery production careers.
9.4 Evaluate work ethics and team building skills used in industry today. ½

Evidence Standard is Met

The student will:

- Develop a presentation for a small group on opportunities in the nursery industry.
- Determine SAEP projects that could be developed around the nursery industry.
- Debate issues on current developments in nursery production.
- Develop a program of activities for the FFA chapter.

Integration/Linkages

Language Arts, Social Studies, National FFA Guidelines for Public Speaking, National FFA Guidelines for Proficiency Awards and Degrees, National FFA Code of Ethics, National FFA Guidelines for Nursery and Landscape CDE, career development event, SCANS (Secretary's Commission on Achieving Necessary Skills)

Sample Performance Tasks

- Lead a group on a tour of your facilities.
- Prepare a six-to-eight-minute presentation on nursery production.
- Divide into groups and have a debate in class on a nursery production subject.

- Evaluate an SAEP project in class that could be done by students.
- Complete an application for a related FFA proficiency award.
- Complete an application for an advanced FFA degree.
- Participate in the National FFA Nursery and Landscape CDE, career development event.